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PUBLIC ASSISTANCE, FEMALE HEADSHIP, AND ECONOMIC WELL-BEING

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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ABSTRACT

In recent years there has been a rapid growth in the number of households headed by women and in the proportion of these households receiving public assistance. This paper presents a model to test the hypothesis that changes in the public assistance system contributed to the increase in these households. Current Population Survey data on the number of women in various household status categories and the level of economic well-being associated with these categories are analyzed. Major findings include: (1) most of the increase in female-headed households was accounted for by childless women who are generally ineligible for public assistance benefits; (2) although the public assistance system has become more generous in recent years, a married woman who becomes a female head can expect a substantial drop in her level of economic well-being.

INTRODUCTION

The living arrangements of Americans have changed dramatically in recent years--a larger proportion of households are now headed by the young, the old, women, and prime-aged single men. This is partly a result of the pattern of birth and death rates over the past quarter of a century, and the rise in the average age for leaving school. However, it may also be due to responses by various groups to changes in social welfare programs. Increases in government transfer payments (e.g., Social Security, Unemployment Compensation, Aid to Families with Dependent Children), both absolutely and relative to wage rates, may have encouraged some households to break apart that otherwise might not have been able to afford separate living units. Increased transfers may also have reduced hours worked and even participation in the labor force. Through both the household formation and work responses, increased transfers may have fostered growth in the number of low-income households, even while improving the level of well-being of the members of these households. This increase in the number of low-income households increases poverty and inequality as conventionally measured.

That the transfer system may have have resulted in more measured poverty is plausible, but is it quantitatively important? Are the labor supply and household headship effects statistically significant in the presence of other determinants? If so, are they large enough to have a noticeable effect on the proportion of persons and households in poverty? This paper reports on one of a series of studies intended to answer these questions. Specifically, in this paper, we model a process in which women aged 25 to 54 choose to become household heads.[1]

The next section describes recent changes in the patterns of female headship and the receipt of public assistance. Then, data on the relationship between marital status and economic well-being are presented and previous models of the effects of welfare programs on women's decisions to head their own households are evaluated. We then develop a model of the determinants of women's decisions to become household heads and demonstrate how that model can be used to measure the likely magnitude of "transfer-caused" increases in the number of households headed by women, and the resulting increases in poverty for this group. While the complete model has not yet been estimated, one component of this model is analyzed here: those equations that predict a woman's potential income (from work and welfare) and labor-force participation from her characteristics and features of the public assistance system. These estimates provide a comparison of the levels of economic well-being that a woman can expect to experience as a married woman and as a female head of family.

FEMALE HEADSHIP AND THE RECEIPT OF PUBLIC ASSISTANCE

The coincident and rapid growth in households headed by women with children present and the growing generosity of the welfare system lend plausibility to the belief that transfer payments could have been a quantitatively important factor affecting measured poverty. Table 1

[Table 1 here]

indicates that the proportion of households headed by women grew extremely rapidly between 1968 and 1975. Not only did the proportion of households headed by women rise to about a third of all households, but the fraction of all women heading households also rose. Female-headed households with children, the largest group eligible for public assistance benefits, grew by 57 percent.[2] In fact, the number of these households receiving welfare grew by 153 percent. Although the number of female heads with children and those receiving welfare grew at the fastest rates, the size of these groups relative to all households headed by women remains small. Thus, most of the increase in female-headed households was accounted for by childless women--women generally ineligible for welfare benefits, even if poor.

The Growth of Female-Headed Households with Children: A Decomposition

Our analysis of the effects of transfer payments on poverty focuses on female heads with children because they are the group most likely to receive public assistance. Here, we explore the sources of the changes in headship. Subsequently, we describe some aspects of the welfare system and the distribution of welfare payments.

The increase over the period 1968-1975 of 1.68 million female-headed households with children is decomposed into mutually exclusive components in Table 2. These components identify those factors that give rise to female-headed households with children, arithmetically at least.[3] For women who have been married, these components are changes in: the size of the adult female population, the proportion of marriages that dissolve, the probability that children are present when the dissolution

[Table 2 here]

takes place, and whether or not the woman then chooses a living arrangement that leads the Census Bureau to label her a household head or a member of a subfamily.[4] Finally, for women who have never been married, the change in the percentage having children is taken into account, as well as other changes in chosen living arrangements. The decomposition answers the following sort of hypothetical question: Suppose that, as the population (of women) grew between 1968 and 1975, the illegitimacy rate and the dissolution rate stayed at their 1968 levels, and the percentage of women in dissolving marriages who had children, and the percentage of these women in various living arrangements remained the same.[5] In that case, how many more households headed by women with children would there have been in 1975 than in 1968, and what percentage of the total increase in households headed by women with children does that represent?

Whether such components prove to be especially large (or small) influences the choice of a model. Obviously, if the decomposition indicated that the increase was dominated by the growing proportion of never-married women with children, concentrating on modeling marital dissolution would be inappropriate. More significantly, if the growth in the number of women per se were the dominant component, a model would be unnecessary since recent changes in the transfer system would not be responsible for the growth in the adult female population.

For white women, the decomposition suggests that marital disruption is indeed an important factor in the growth of households headed by women with children present. The increase in the probability of marital dissolution directly accounts for 17 percent of the total growth. The increased probability that women whose marriages dissolved would have children accounts for an additional 29 percent (even though the proportion of ever-married women who were childless also increased). Finally,

the increased probability that a previously married woman with children but with no husband present chose to be a household head (rather than live as a member of a subfamily) accounts for about 10 percent of the total.

For nonwhite women, marital dissolution is note quite so important. The growth of the adult female population and the rapid increase in the number of never-married women having children overshadow both the growth in disruption and the probability that women whose marriages dissolved would have children. Furthermore, the probability that nonwhite women would become household heads after marital disruption actually declined over the period. Nevertheless, marital disruption accounts for about 13 percent of the growth.[6]

The decomposition of Table 2 also provides a crude upper-bound measure of the potential role of transfers in producing the rise in families headed by females with children. The availability of transfer benefits could have influenced the percentage of dissolved marriages where children were present, the number of marital dissolutions, women's choice of living arrangements after dissolution and illegitimacy rates. These components account for 80 percent of the growth of families with children headed by white women and 62 percent of families with children headed by nonwhite women (if the residuals are included). Twenty-one percent of the growth among whites and 37 percent among nonwhites were due to population growth and cannot be attributed to changes in the welfare system. Four-fifths of the increase for whites and two-thirds of the increase for nonwhites in families headed by women with children are, therefore, upper-bound

estimates of the effect of the transfer system. These are overestimates, since they attribute all changes in factors other than population growth to changes in public assistance. Further discussion will pare them down.

Repeating this decomposition for particular age groups (table not shown) reveals patterns similar to those for all women as reported in Table 2. An important exception, however, is the rapid growth in headship for women 14 to 25 years old, for whom increasing illegitimacy was the most important component. Since the underlying causes of headship are so different for younger women, and for older women for whom widowhood is an important factor, they are both excluded from further analysis in this paper.[7]

Welfare Recipiency

As female headship rates grew, so did the proportion of women receiving welfare. Benefits also increased rapidly. For example, for women aged 25-54 heading households with children, average benefits rose by 62 percent between 1967 and 1974. Growth in total family income of this group exceeded the growth in average benefits paid, since average earnings nearly doubled over the interval. These facts suggest that the welfare system became more generous in several ways. Although total welfare benefits generally are lower for smaller families, average family size of recipients fell over this period, but average benefits rose. A likely explanation is that benefits for families of every size increased. Similarly, although benefits generally decline as earnings increase, both earnings and benefits grew substantially over

this period. Again, one explanation is that transfer benefits were higher at all earnings levels. Furthermore, average benefits grew more rapidly than did prices.[8] Thus, an increasingly generous welfare system could have contributed to the rising number of households headed by women.

Table 3 summarizes our argument thus far. The number of households headed by women increased substantially (line 1). Most of this increase is accounted for by women without children, who are generally ineligible for welfare (line 1 minus line 2). In addition, the decomposition implies that about 25 percent of the growth among women with children (who may be eligible for welfare), is attributable simply to population growth per se, and cannot be attributed to the welfare system. [TABLE 3 HERE]

Nevertheless, the transfer system could have been important. Table 3 shows that the number of female-headed households with children increased by 1.68 million (line 2) at the same time that the number of such families receiving welfare grew by 1.15 million (line 3). Thus, the proportion of female-headed households receiving welfare increased from 25 to 41 percent.[9]

A crude estimate of the potential role of the welfare system in adding to the number of female-headed households can be derived from Table 3. The increase in the number of female-headed households with children receiving welfare (1.15 million) was 26 percent of the total growth of female-headed households. If every welfare recipient were a household head only because of welfare, and if every head not receiving welfare benefits ignored the welfare system when choosing her marital

and headship status, then 26 percent of the increase would have been caused by the welfare system. Whereas this ratio is based on unrealistic assumptions, the model presented below is designed to produce a reasonably accurate estimate of the effect of welfare.[10]

In this section we have suggested that the welfare system may have played a causal role in the growing number of households headed by women. An important part of the argument is that the welfare system has become more generous in recent years. In the next section we compare the economic situations of women in various living situations.

MARITAL STATUS AND ECONOMIC WELL-BEING

Despite increases in welfare benefits and recipiency rates, a married woman who becomes a female head can expect a substantial drop in her level of economic well-being. Figure 1 presents the 1975 distribution of women aged 25-54 across household status categories and displays two measures of well-being: the welfare ratio of family income and the percentage of women in poverty.[11] In the figure, each box represents one household status category, and the lines leading from it are the exhaustive subcategories into which it can be decomposed. For example, on the right, the category of never-married women is divided into those with children and those without, and those with children are further subdivided into those who head a family and those who do not. The figure indicates that the average income of a family of a never-married woman with children is only slightly above the poverty line (their mean welfare ratio is 1.16), whereas the income of a family that contains a husband in addition to

[FIGURE 1 HERE]

the woman and children is over three times the poverty line (3.22). There is an even greater disparity in the percentage in poverty for these two types of family--57.9 percent of the never-married women are poor, whereas only 5.6 percent of the women with husbands present are poor.

The figure presents a telling picture of the economic situation of women heading families with children. They appear in the bottom row of boxes as ever-married women[12] heading families with children (on the left) and as never-married women heading families with children (on the right). The figure traces the path from the ever-married and never-married boxes near the top of the figure down to those two "female head" boxes. At each fork that splits a category into two exclusive subcategories, the subcategory containing female heads has a lower level of economic well-being and a higher incidence of poverty than its alternative. Thus, among ever-married women, those without husbands are less well off than those in intact marriages; among ever-married without husbands present, those with children are less well off (more likely to be in poverty) than those without; among ever-married women with children without husbands present, the family income of those who head their own families is lower (relative to the applicable poverty line) than the family income of those who live as subfamilies.

For never-married women, the pattern is similar. Never-married women with children have markedly lower income relative to the poverty line and a higher incidence of poverty than those without children; and among those with children, women heading families are economically worse off than women who are subfamily heads. The women with the

highest income to needs ratio are women in intact marriages without children.

An examination of the same set of welfare ratios for whites and nonwhites separately (figure not shown) reveals that nonwhite women are worse off (have lower family welfare ratios and a greater incidence of poverty) in each category than white women because of their generally lower income and larger families. Given this difference in level, the patterns of the two groups are generally similar.

If we compare the 1975 welfare ratios in Figure 1 with the 1968 welfare ratios, we find that women in general are better off in 1975 (figure not shown).[13] The average welfare ratio for all women 25-54 was 3.01 in 1968 (compared to 3.45 in Figure 1), and the overall incidence of poverty fell slightly from 10.2 to 9.4 percent during the period. The 1968 figures show the same pattern of lower levels of well-being and higher poverty incidences for women heading families with children than for women in the other categories.

Whereas Figure 1 was based on total family income, Figure 2 presents the average own income of women, the percentage who receive public assistance, and the weeks worked by women. Own income includes earnings, transfers, and any other income of the woman herself. This measure differs from the welfare ratio in two important ways: (1) it is expressed as dollars of income, not income divided by the poverty line (hence, not "corrected" for family size); and (2) it refers to the earnings and other income of the woman herself, not the whole family in which she lives. The own income pattern runs opposite the family welfare ratio pattern:

women who head families have the highest average own income, and at each step down the line toward female headship with children average own income increases. Thus, among ever-married women, own income is higher on the average for women without husbands than for women with husbands ($5889 versus $2804); among ever-married women with no husband present, average income is higher for those with children than those without children; and for those with children, average income is higher for those who head families than for those who head subfamilies. A similar set of transitions appears among never-married women.

Taken together, the income patterns in both figures indicate that the lower levels of well-being of female-headed families do not result from an inability of the woman herself to gather resources. Rather, they result from a lack of access to others' incomes, specifically the income of a husband or a wider family.

Figure 2 also presents the patterns of labor-force participation and welfare recipiency. They reinforce the story of the income patterns. Welfare recipiency rates, like own incomes and the incidence of poverty, increase consistently along the paths toward the two categories of women heading families with children. Because of the eligibility rules for Aid to Families with Dependent Children (AFDC), women without children or with husbands present are not likely to receive public assistance income. For example, only 1.1 percent of all women with husbands present received public assistance income, whereas 33.3 percent of those with children but no husbands received such income.

[FIGURE 2 HERE]

The average number of weeks worked during the previous year by women in each category does not follow the same sort of consistent increasing or decreasing pattern. Women with husbands work less than women without husbands, and women with children work less than women without children. These work patterns may result from conflicting needs for income and childcare. Because women with husbands can generally rely on their husband's earnings, they work less and have more time available for child care than do women without husbands. Because women who live as subfamily heads within a wider family can generally rely on other family members for child care, they work more than women heading families.

Both female headship and welfare recipiency increased between 1968 and 1975. But women who become female heads are more likely to be poor even though they work more and have higher own income than similar women who live with husbands. An important part of our model is addressed to explaining the patterns of income, work, and welfare of women in various living situations. But, before outlining that model, we briefly describe the previous work on which our model builds.

LITERATURE REVIEW: INCOME TRANSFERS AND HOUSEHOLD COMPOSITION

There exists a fairly extensive literature that attempts to estimate the effects of government transfers on marriage, marital dissolution, remarriage, household formation, and household composition. A comprehensive review is provided by Wolf (1977). We focus only on those studies that utilize individual rather than aggregate data.[14]

Most previous studies using individual data have used panel data that follow the same individuals over time in a cross-sectional manner, with the time dimension entering only in the specification of the dependent variable (e.g., Ross and Sawhill, 1975; Sawhill et al., 1975; Hoffman and Holmes, 1976; Cherlin, n.d.). The method used by these studies has been to choose a sample of couples who are married at some initial point, and then to use as the dependent variable the marital status at some later point. The two possible states at the later date are usually "intact" or "not-intact." However, Hutchens (1977) models the marriage or remarriage decisions of women with children who were "not-intact" at the initial date.

These models generally take the following form:

$$S_1 = \sum_i \alpha_i X_i + \varepsilon,$$

S_1 = a dummy variable characterizing marital status at the later date, and

X_i = a vector of variables such as husband's earnings, wife's earnings, AFDC benefits, region, number of children, education of wife, etc.

This equation is then estimated by ordinary least squares. All but two of these studies found the effect of welfare income on marital status to be <u>not</u> significantly different from zero.[15]

Except for Wolf's, all of these studies suffer from several problems--the inclusion of endogenous explanatory variables in a single equation model, the misspecification of AFDC parameters, and the use of an inappropriate estimation technique. For example, the first problem appears in the

specification of the woman's work behavior: a woman's earnings are determined simultaneously with marital status and husband's earnings, yet these studies assume (incorrectly, according to Figure 2, above) that a woman's earnings would be the same whether she lives with her husband or as a female head. Similarly, the AFDC variable should represent the welfare benefits a woman could expect if she were on her own, not what she currently receives, since it is expected welfare and earnings possibilities as a female head that she compares with her married situation in making a decision whether or not to head her own household. Rather than estimating an expected welfare benefit, these studies use the average benefit in the woman's state or region which is as much a function of the characteristics of all families in the area as an indicator of the individual woman's possibilities. In effect, potential AFDC benefits should also be treated as endogenous, for they are a function of the characteristics of the woman (and the family she would bring with her into female headship) as well as of the AFDC program where she lives. In addition, most earlier studies (except those by Hutchens and Wolf) use the ordinary least squares estimation technique which produces biased coefficients in models with a qualitative dependent variable. A final criticism stems from a problem inherent in using data on a cross-section of individuals to estimate behavioral relationships. Large data sets do not measure certain individual characteristics (e.g., personality traits) that may influence decisions to marry or divorce, and such omitted variables can cause a variety of errors of estimation or interpretation.

Wolf's (1977) sutdy took steps to alleviate most of these problems, but he too is constrained by available data. Using a sample of 503 black families

with both husband and wife present in 1972, Wolf estimated the determinants of the probability that a marital dissolution occurred between 1972 and 1974. At the same time that his model determines the probability of dissolution, it determines hours worked by, and earnings of, the husband and the wife. The model also takes into account the potential income of a married woman from earnings and AFDC if she were to become a female family head. Wolf used two-stage least squares in conjunction with the probit estimation technique to deal with the endogenous explanatory variables and to overcome the standard problems of estimation with a qualitative dependent variable.

We now turn to the model we use to examine the determinants of headship and the economic well-being of women. Our study directly builds on Wolf's model and, like Wolf, we have confronted all the problems mentioned in this literature review, except that we also lack data on important personal characteristics. Our study differs from Wolf's in its use of a pure cross-section from the Current Population Survey rather than a cross-section of panel participants.[16] Thus, rather than predicting a particular transition--from married woman to female head--we examine family headship and the economic well-being of women aged 25 to 54 at the survey date.

THE MODEL

Theory

In this section the theoretical underpinnings of the model are presented, the estimation process is specified, and preliminary results are presented.

We hypothesize that each woman chooses among three mutually-exclusive headship statuses: heading her own household, living with a husband (which makes her husband officially the head of the household), or living in a household in which some other relative is head.[17] We label these possibilities "headship statuses," and abbreviate them as S (self is head), H (husband is head), and F (some relative other than her husband is head).[18]

We use an economic model to capture the woman's decision-making process. Of course, the actual process of choosing a headship status has a strong idiosyncratic component that cannot be completely specified. Any woman has a specific rationale for her particular choice, a rationale that rarely fits a purely economic scenario. Few women carefully weigh costs, compare expected utilities or calculate tax rates in alternative headship statuses. Also, our model is one in which the woman makes the choice whether or not to become a head, whereas in reality, the concerns of others must be taken into account.[19]

Despite every individual's belief that her own decision reflects her unique situation, regular patterns have been observed in the aggregate data. Women who head their own households tend to have lower incomes and greater work effort than women who live with husbands. Women with children are more likely to receive welfare if they are female heads than if they are married. Since we are concerned with the impact of changes in known, policy-determined variables on the relative probabilities of headship, we seek to identify the parameters that shape the observed patterns.

Our economic model of the decision-making process specifies that a woman chooses the headship status from which she expects the greatest utility. Each headship status is represented by a separate utility

function, which the woman perceives. Given the assumption that a woman makes such a decision by comparing her utility in each status, we can develop a testable model.

Each of the three utility functions has two components, a linear "representative" utility and a random error. For example, the representative utility of being a household head is an exact function of the income accruing in that status and the leisure available in that status. Every individual with the same income and leisure gets the same nonstochastic utility from being a household head. Differences in income and leisure in the three headship statuses are the economic variations that influence a woman's decision. However, each woman also has personal idiosyncrasies, which are captured in the error term. This error term also contains any psychological or noneconomic variables that are omitted.

The argument to this point can be summarized as follows:

A1. There are three mutually-exclusive headship statuses. Each woman chooses the status that provides her the maximum utility. The utility in each status is a function of its arguments and a randomly-distributed error component.

Our assumption that women make decisions unilaterally is equivalent to the economist's usual assumption that all "markets are perfect." Suppose a woman calculates that the utility of being married is higher than the utility available in another status. This implies that the woman wants to be married to a man with attributes similar to those of the husbands of women with attributes like her own, and that such a husband could be obtained.[20]

We also assume that a woman determines the utility of each of the three statuses by taking her current demographic traits and region of residence

as constant. For example, a married woman assumes she would have as many children living with her if she were a female household head or a member of a household headed by a relative as she currently has living with her. What varies across the headship statuses are the expected levels of income and leisure, not her demographic traits.

Again, in summary, we assume:

A2. Any one of the three headship statuses are available to all women. All of a woman's characteristics, except her expected income and leisure, are constant across statuses.

Given these basic assumptions, our model can be estimated using a cross-section of women from the Current Population Survey. The cross-sectional data reveal the probability that a given woman will occupy any one of the three statuses, not the probability of making a transition from one status to another. By aggregating these cross-sectional probabilities over all women, we derive the number of women in each headship status at the time of the survey.

This model of the determinants of women's choices of headship status has two parts. The first is the equation that describes the relationship between the arguments of the three utility functions and the probability of choosing any headship status. The second (which must be estimated first) is a set of equations that relate a woman's observable characteristics and the economic arguments of the three utility functions. These two parts are discussed in turn.

Headship Status Decisions

Our model specifies that decisions about headship status depend only on the relative utility attainable in each of the three statuses. Since each utility function has a random component, we predict the headship status of a woman probabilistically. Our estimation procedures are of the limited dependent variable type (e.g., McFadden, 1973). The dependent variable is limited to three possible values--S, H, and F--representing the woman's headship choices (self is head; husband is head; other family member is head). We denote that dependent variable as Pr[STATUS] for each woman, where STATUS takes on the three possible values, and each has a probability of occurring. The equation is:

$$Pr[STATUS] = f(U_S, U_H, U_F),$$

where U_S, U_H, and U_F are the utilities available in the three headship statuses, derived from the three utility functions.

The utility of being in a given status is a function of the attainable consumption (income) and leisure available in that status as well as the tastes of the woman. Thus for each woman, the utility of being in status i is a function of the following variables: (1) total earned income of her household in status i, (EY_i); (2) total welfare income of her household in status i, (WY_i); (3) total other unearned income of her household in status i, (OY_i);[21] (4) the woman's leisure time in status i, as measured by weeks worked, (WKS_i); (5) a set of taste or personal choice variables (T).

Since we assume income sharing within households, a woman's possible consumption in each status (and hence, her utility) depends on the total income of all household members. Thus, EY_H (household earnings if married) includes the sum of the woman's earnings (if any) and the husband's earnings (if any).[22] If the woman is a female head of a household with no other earners, then EY_S includes only her own earnings. By treating earnings, welfare, and unearned income as separate arguments of the utility function, we leave open the possibility, for example, that the contributions to utility of a dollar of welfare income and a dollar of earnings may differ.

The utility functions can be specified as follows:

$$U_S = g_S(EY_S, WY_S, OY_S, WKS_S, T)$$

$$U_H = g_H(EY_H, WY_H, OY_H, WKS_H, T)$$

$$U_F = g_F(EY_F, WY_F, OY_F, WKS_F, T).$$

Utility increases with income and leisure in each headship status. Therefore:

$$\frac{\partial U_i}{\partial EY_i}, \frac{\partial U_i}{\partial WY_i}, \frac{\partial U_i}{\partial OY_i} > 0, \text{ and } \frac{\partial U_i}{\partial WKS_i} < 0, \text{ where } i = S, H, \text{ or } F.$$

For convenience, specify the whole vector of economic variables as:

$$Y_i = (EY_i, WY_i, OY_i, WKS_i).$$

Then, the three utility functions can be rewritten as

$$U_i = g_i\ (Y_i, T).$$

Any woman can occupy only one headship status at any given moment. But to choose among the three statuses, she forms expectations about her utility in each one; that is, by making predictions about the values EY, WY, OY, and WKS would take in each status. The derivation of these expectations are the subject of the next subsection of this paper. However, the discussion of a woman's decision to head a household now proceeds on the assumption that each woman perceives the expected values for all of the arguments of each utility function.[23]

The utility a woman derives in a given status is affected not only by her consumption and leisure opportunities, but also by such personal characteristics as her number of children, her preferences for different statuses, and the costs associated with each status. These factors, which are represented by the vector T, are constant across each headship status and include such variables as age, education, region, number of children, rural or urban residence, and difficulty of divorce in the woman's region of residence.[24] These variables influence the utility attainable in each headship status, holding consumption and leisure opportunitites constant. For example, women with children might attach greater disutility to being heads of their own households than would women without children. If this were so, the model would predict that women without children would have the higher probability of being a female head.

The effect of any argument of the utility functions on the probability of choosing any specific status can now be estimated. First, we substitute the arguments of the utility functions directly into the headship equation:[25]

$$Pn[STATUS] = h(Y_S, Y_H, Y_F, T).$$

Then, using a logistic model, we estimate coefficients that correspond to the arguments of the utility function and the taste variables. These coefficients express the effect of any independent variable on the probability of being in any headship status, and, for every woman, are used to calculate the probabilities of her being either a household head, a married woman, or a member of a subfamily.[26]

We can then determine how the probabilities of being in each status change when the value of any exogenous variable changes. An experiment of interest is the effect on headship probabilities of changes in the parameters of the welfare system. For example, suppose that a change in the welfare system raises the household welfare income for female family heads, and all other variables remain unchanged. This would increase the utility of being a female head (since $\partial U_1/\partial W_1 > 0$) and, hence, via the logit coefficients, increase the probability that the woman would be a female head, and decrease the other two probabilities.

Before the headship equation can be estimated, we must estimate, for each woman the components of the utility functions of each headship status. This involves the estimation of the components of economic well-being in the vectors Y_S, Y_H, and Y_F.

The Components of Economic Well-Being

The headship model assumes that each woman forms expectations about her utility in all headship statuses, including the two with which she has no current experience. For example, a married woman must estimate what her total household earnings would be if she were a female head.

This differs from her current household earnings for two reasons: first, total household earnings if married include the earnings of her husband, which would not be available if she headed a household; second, her own earnings would change if her labor-force behavior as a female head differed from her current behavior.

A woman estimates these values by observing women like herself who occupy these other statuses. In this paper, the components of total income (earnings, public assistance income, and other income) and weeks worked in a given status are estimated with a simultaneous equations system using data on women who occupy that status. The regression coefficients from this model are used to impute values of income and weeks worked to women with similar characteristics who occupy different headship statuses. For example, we estimate a simultaneous equations system of the components of income and weeks worked using data on women who are currently female heads of household. Then, the resulting regression coefficients are applied to all women, yielding predictions of income and weeks worked if a female head.[27] The regression coefficients from the equations that are estimated using data on women who are currently married are used to predict the arguments of the married utility function for all women. Similarly, we estimate equations using data on women who live in households headed by other relatives to predict the arguments of the subfamily utility functions for all women. Thus, there are three simultaneous equations systems to be estimated (one for each headship status), and each system contains four equations (one each for EY_i, OY_i, WY_i, and WKS_i).[28]

The structural model contains three types of variables: endogenous variables, exogenous variables referring to individual characteristics of

each woman (C_j), and exogenous variables referring to characteristics of the welfare system in the woman's geographic region (G_j). The four equations on earned income, welfare income, other income, and weeks worked of female heads can be specified as follows:[29]

(I) $EY_S = f_1(WKS_S, C_j)$

(II) $WY_S = f_2(EY_S, OY_S, C_j, G_j)$

(III) $OY_S = f_3(EY_S, WKS_S, C_j)$

(IV) $WKS_S = f_4(EY_S, WY_S, OY_S, C_j)$.[30]

The specification embodies a variety of behavioral assumptions by the choice of variables included and excluded in each equation. The first equation, for household earned income, assumes that welfare income and other income do not affect earnings directly. This is tantamount to assuming that receipt of welfare or other income does not affect the wage rate, since equation IV makes clear that welfare and other income affect weeks worked, which, in turn (according to equation I), affects total earnings. The presence of children is also assumed not to affect earnings except through weeks worked.

The second equation specifies the determinants of welfare income. Because of the rules in the AFDC program (the major form of welfare income for women of this age), benefits vary inversely with earnings (EY) and other income (OY). Weeks worked is excluded and its effect is transmitted only indirectly through its effect on the other income terms in equations I and III. The parameters of the welfare system in the geographic region, G_j, are expected to be important determinants of welfare income. We include five of these parameters--the AFDC guarantee adjusted for each woman's family size, the tax rate on earned income, the amount of earnings that

are not taxed (called the "set aside"), and dummy variables indicating whether the region has an emergency assistance program and a program that attempts to require absent fathers to contribute to their children's support.

Other unearned income (equation III) includes such items as dividends, interest, rent, pensions, and social insurance payments. Earnings are expected to be one determinant of unearned income because individuals with higher earnings are likely to have had higher past earnings, as well. Higher past earnings imply higher past savings and, hence, more current unearned income. Social insurance payments, such as unemployment compensation, may depend on weeks worked, so weeks worked is included in equation III. Welfare income is not expected to directly affect other unearned income. We also exclude presence of children and the welfare program parameters.

We expect all the income variables, EY, OY, and WY, to have an effect on the number of weeks worked (equation IV) because income provides the wherewithal to purchase leisure (fewer weeks). Earnings are included because the wage rate affects labor supply. The welfare parameters, G_1, affect weeks worked only through their effects on welfare income in equation II.

Estimates of a Structural Model of Economic Well-Being

As described above, there are separate models for women who head households, for married women, and for women who live with other relatives as heads. These three models are estimated separately for both whites and nonwhites for 1968 and 1975. Thus, there are really 12 separate structural models.

In this paper, however, we discuss only the model for female heads of household in 1975. In addition, we present only three equations. Because we were unable to estimate satisfactorily an equation for other income, we treat it as an exogenous characteristic. Our three dependent variables are household earnings, public assistance income (each divided by the poverty line to standardize for family size), and weeks worked by the woman. Our regression results, estimated using the two-stage least squares technique, are presented in Table 4. [TABLE 4 HERE]

Many of the exogenous variables are statistically significant at the .05 level, as are all of the endogenous independent variables. The estimated signs are consistent with most theories of income generation and with our own hypotheses about welfare. The more weeks a woman works, the higher the ratio of earnings to the poverty line (regression 1); the higher the ratios of earnings and other income to the poverty line, the lower the ratio of welfare income to the poverty line (regression 2); the higher the ratios of other income and welfare income to the poverty line, the less the woman works, whereas the higher the ratio of earnings to the poverty line, the more she works (regression 3).

The regression coefficients do not directly reveal the effect of the welfare system on the dependent variables because the system of equations is simultaneous. To estimate the impacts of the welfare system on economic well-being, the equations must be solved simultaneously. An increase in the AFDC guarantee increases the ratio of welfare income to the poverty line (regression 2), which, in turn, leads to a reduction in weeks worked (regression 3), and then to a reduction in the ratio of earnings to the poverty line (regression 1), which feeds back into the

weeks worked equation. The effect of a $1000 increase in the AFDC guarantee is a reduction of -0.11 in the ratio of earnings to the poverty line (9 percent of the mean ratio of earnings). However, this is partially offset by an increase of 0.05 in the ratio of welfare income to the poverty line (22 percent of the mean ratio of welfare income), leaving a net reduction in the ratio of total income to the poverty line of 0.06, about 5 percent of the average total income. The increased AFDC guarantee also increases leisure by about 8 percent (a drop in mean weeks worked of about 2 weeks). Thus, increases in the AFDC guarantee lead nonwhite female heads to substitute leisure for income. None of the other parameters of the welfare system have effects that are significantly different from zero.

The results for white female heads (not shown) are similar to those for nonwhites. All of the endogenous variables, except earnings in the weeks worked equation, are significant at the 5 percent level. A $1000 increase in the AFDC guarantee for whites also leads to a substitution of leisure for total income, and results in a 0.12 reduction in the ratio of earnings to the poverty line (6 percent of the mean ratio of earnings), an increase of .04 in the ratio of welfare income to the poverty line, and a net reduction of .08 in the ratio of total income to the poverty line (a drop of about 4 percent). Leisure increases by about 5 percent (a reduction in mean weeks worked of 1.6 weeks). None of the other parameters of the welfare system are significant, except for the set aside which has the incorrect sign.

The regressions also reveal that nonwhite female heads have lower earnings than whites (the mean ratios to the poverty line are 1.18 and

2.02, respectively) and higher welfare income (the mean ratios are .21 and .10, respectively). Despite higher welfare levels, nonwhite total incomes (adjusted for family size) are only about two-thirds as large as those of whites.

Estimates of the Headship Status Equation

With the regression coefficients from the structural model, we can predict for all women what their weeks worked and incomes would be if they were female heads. With the regression coefficients from the structural model for married women (or for women who live in families headed by other relatives), we can predict what these values would be if they were all married women (or members of a family headed by a relative). These predicted values are the independent variables in the headship status equation described earlier.

We have not yet estimated the effect of these variables on the probability of a woman choosing each headship status. However, several results emerge from an analysis of the predicted values from the structural models. Of the 1056 nonwhite female heads (3181 whites), there were only 64 (33) for whom predicted total income (adjusted for family size) as a female head even equalled predicted total income (adjusted for family size) as a married woman.[31] For all of the rest, predicted incomes if head were less than predicted incomes if married. On average, a married woman could expect that her economic well-being would be cut by about 40 percent if she were to become a female head.[32] Thus, most women, in choosing to become a female head, would experience a severe

reduction in available income. To make matters worse, mean predicted weeks worked if a female head exceeds mean predicted weeks worked if married, so that a woman who becomes a head can also expect less leisure. From the preliminary analysis, then, it seems that the availability of welfare merely provides a cushion against the loss of income associated with becoming a female head. It does not make being a female head a more lucrative position than being a married woman.

SUMMARY

We have documented the changes that have taken place in the patterns of female headship and the receipt of welfare between 1968 and 1975. We have also estimated the effect of changes in the welfare system on the economic well-being of female heads. In future work we will complete our model by estimating the effect of the components of well-being on the decisions of women to head their own households, and by using these estimates to calculate the number of female heads living in poverty who would not have been poor and would not have headed their own households in the absence of the welfare system.

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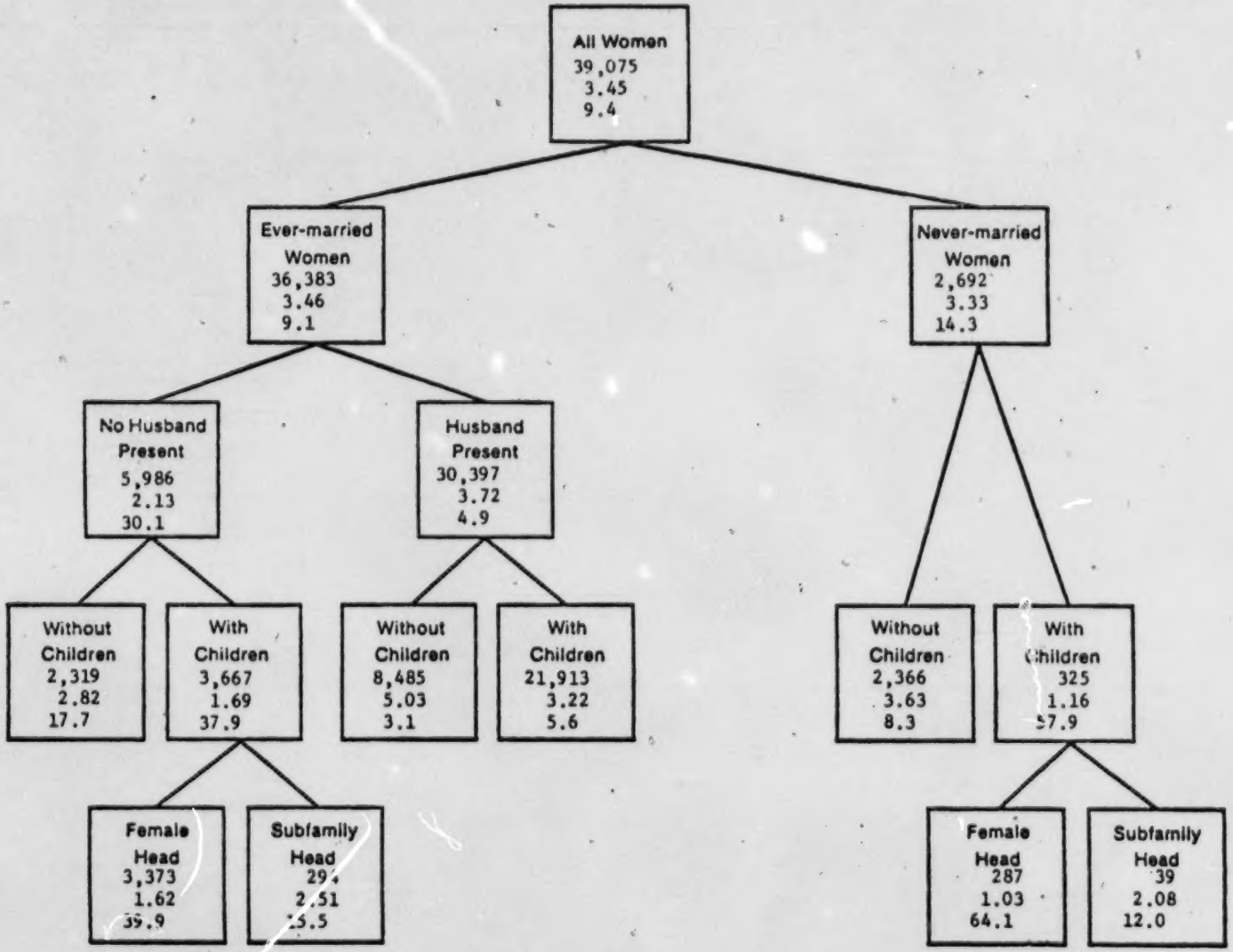

FIGURE 1. WOMEN 25-54 IN 1975:
NUMBER OF WOMEN (IN THOUSANDS);
MEAN RATIO OF FAMILY INCOME TO POVERTY LINE;
PERCENTAGE IN POVERTY.

Source: See Table 1.

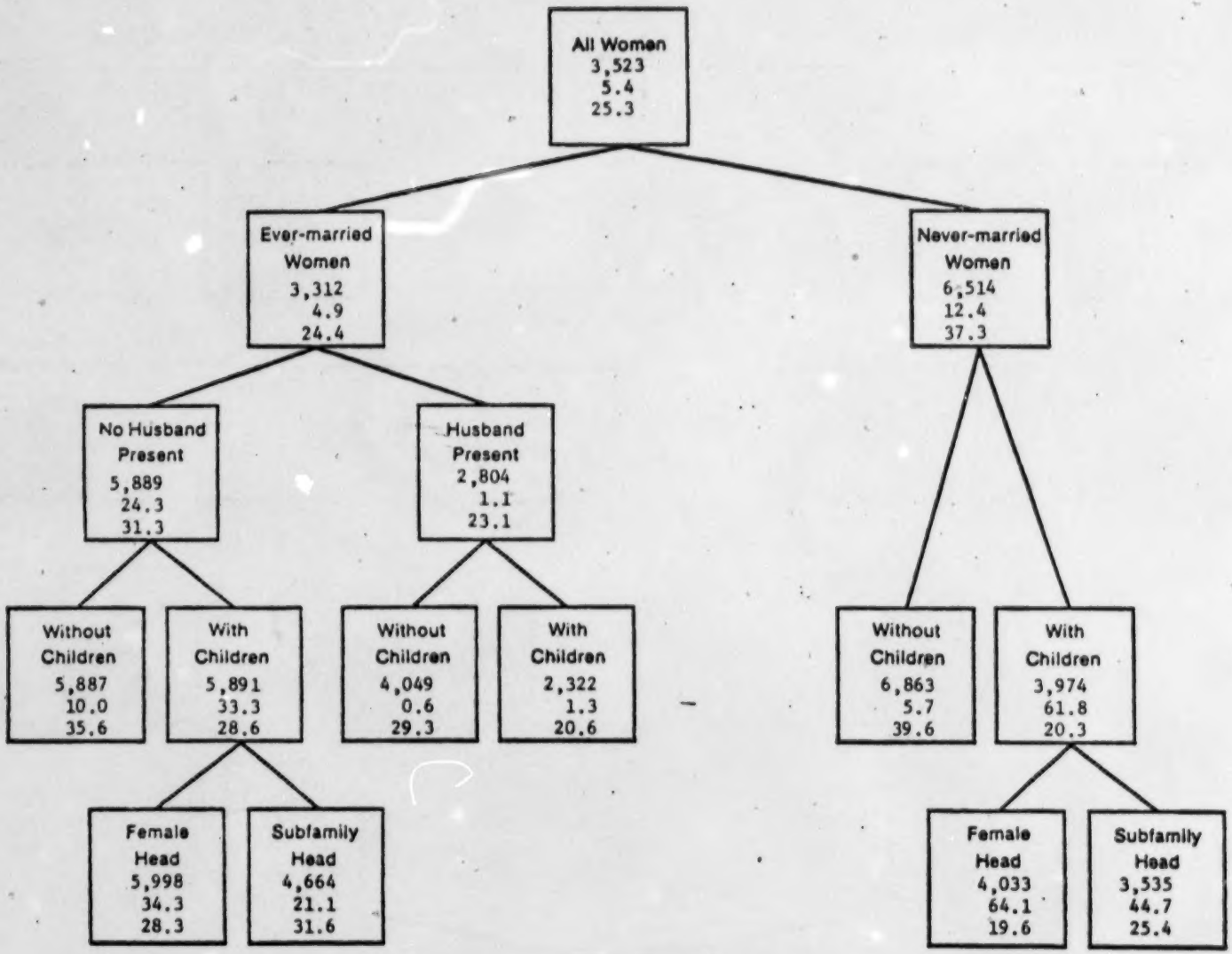

FIGURE 2. OWN INCOME AND ITS SOURCES FOR WOMEN 25-54 IN 1975:
AVERAGE TOTAL OWN INCOME;
PERCENTAGE WHO RECEIVE PUBLIC ASSISTANCE;
AVERAGE WEEKS WORKED.

Source: See Table 1.

TABLE 1. SELECTED GROWTH RATES, 1968-1975

	Percentage Increase
All women (over age 14)	14%
All households[a]	18
Headed by women[b]	34
With children present	57
With children present, and receiving welfare	153

Source: Tabulations by authors from the computer tapes of the March 1968 and March 1975 Current Population Surveys.[c]

[a]We define "households" as the sum of families plus unrelated individuals. The Census defines a family as "a group of two or more persons related by blood, marriage, or adoption and residing together" and unrelated individuals as "persons 14 years old and over who are not living with relatives."

[b]A woman is not classified by the Census as a head of a family if her husband is a resident member of the family. We use the terms households headed by women and female-headed households synonymously.

[c]Our model requires data on detailed sources of income by detailed household types. This data, for a large sample, is available only in the Current Population Survey. At the time this research began, 1968 and 1975 were the earliest and latest years for which comparable data existed. The March Current Population Surveys report income for the prior year.

TABLE 2. COMPONENTS OF GROWTH IN HOUSEHOLDS HEADED BY WOMEN WITH CHILDREN UNDER 18, 1968-1975[a]

Components of Change	White Women	Nonwhite Women
	Percent of Total Increase Due to Each Component	
Total (FHFC)	100%	100%
Living arrangements (EFHFC/DC, NFHFC/NC)	9.5	-5.5
Presence of children (DC/D)	29.4	14.1
Marital dissolution (D/E)	17.3	12.8
Population growth (E/N)	21.1	37.5
Illegitimacy (NC/N)	11.1	32.9
Interaction (Residual)	11.7	8.2

[a]The numbers in the table are derived by substituting 1975 values for each component into the 1968 equation, where

$$FHFC = \left(\frac{EFHFC}{DC} \cdot \frac{DC}{D} \cdot \frac{D}{E} \cdot E\right) + \left(\frac{NFHFC}{NC} \cdot \frac{NC}{N} \cdot N\right).$$ The difference between the predicted value of FHFC and the 1968 FHFC is expressed as a percentage of the actual difference between the 1975 and 1968 FHFC.

FHFC: Number of women heading families with children under 18 (FHFC = EFHFC + NFHFC)

EFHFC: Number of ever-married women heading families with children under 18.

NFHFC: Number of never-married women heading families with children under 18.

DC: Number of ever-married women with no husband present with children under 18 (these women are divorced, separated, or widowed).

NC: Number of never-married women with own children under 18.

D: Number of ever-married women with no husband present.

E: Number of ever-married women.

N: Number of never-married women.

Source: Tabulations by authors from the computer tapes of the March 1968 and March 1975 Current Population Surveys.

TABLE 3. CHANGES IN THE NUMBER OF HOUSEHOLDS HEADED BY WOMEN AND THE NUMBER OF WELFARE RECIPIENTS (ALL NUMBERS IN MILLIONS)

Households Headed by Women	All Women 14+			Women 25-54		
	1968	1975	Change	1968	1975	Change
1. All households	13.06	17.53	4.47	4.71	6.84	2.13
2. With children	2.95	4.63	1.68	2.41	3.66	1.25
3. With children that receive welfare	0.75	1.90	1.15	0.59	1.40	0.81
4. Welfare recipiency rate, female heads with children (line 3/line 2)	25%	41%	—	25%	38%	—

Source: Tabulations by authors from the computer tapes of the March 1968 and March 1975 Current Population Surveys.

TABLE 4. THE ECONOMIC WELL-BEING OF NONWHITE FEMALE HOUSEHOLD HEADS, 1975. SIMULTANEOUS EQUATIONS ESTIMATES[a]

	(1) Household Earnings / Poverty Line EY	(2) Household Public Assistance / Poverty Line WY	(3) Weeks Worked by Women WKS
Endogenous Variables:			
Household Earnings / Poverty Line		-0.10	9.75
		(3.31)	(3.75)
Household Public Assistance Income / Poverty Line			-22.98
			(2.44)
Weeks worked last year, by women	0.05		
	(14.96)		
Individual Characteristics (exogenous):			
Household Other Earned Income / Poverty Line		-0.16	-6.24
		(7.36)	(2.95)
Age	-0.07	-0.002	-0.02
	(2.03)	(1.87)	(0.37)
Age^2	0.001		
	(2.29)		
Education, 7 years or less	-1.42	-0.04	5.42
	(7.62)	(0.53)	(0.84)
Education, 8 through 11 years	-1.57	-0.09	8.34
	(10.02)	(1.10)	(1.39)
Education, 12 through 15 years	-1.46	-0.14	9.84
	(10.62)	(2.17)	(1.97)
Northeast Region	0.48	0.15	-2.64
	(5.52)	(5.75)	(1.04)
Northcentral Region	0.23	0.10	-1.48
	(2.57)	(4.03)	(0.82)
Western Region	0.20	0.13	1.33
	(1.91)	(4.21)	(0.61)
Central City Resident	0.33	0.07	-2.35
	(3.37)	(3.07)	(1.34)

TABLE 4--CONTINUED

	(1) Household Earnings / Poverty Line EY	(2) Household Public Assistance / Poverty Line WY	(3) Weeks Worked, by Women WKS
Suburban Resident	0.39 (3.30)	0.05 (1.54)	-3.31 (1.66)
Health Problem		0.13 (4.62)	-8.41 (3.83)
Attended school last year		-0.14 (0.22)	-8.52 (1.95)
Head of family is Hispanic	0.11 (0.39)	-0.07 (1.06)	-3.55 (0.81)
Number of children, less than 3 years old			0.02 (0.02)
Number of children, 4 to 6 years			-0.98 (0.81)
Number of children, 7 to 17 years			0.73 (1.31)
Geographic Characteristics (exogenous):			
AFDC guarantee (000's), adjusted for family size		0.036 (3.05)	
AFDC tax rate on earnings		0.05 (0.58)	
AFDC setaside (000's)		-0.03 (1.16)	
Emergency Assistance Program		0.03 (1.02)	
Program to enforce child support		0.009 (0.39)	
Constant	1.98 (2.84)	0.26 (3.12)	16.65 (1.95)
R^2	.522	.406	.587
Number of Observations	1056	1056	1056
Mean of Dependent Variable	1.18	0.21	26.03

[a]The absolute values of the t-statistics appear in parentheses below the regression coefficients.

FOOTNOTES

[1]This study analyzes only this age group because the factors leading to headship for this age group differ from those of younger and older women.

[2]Public Assistance Programs--Aid to Families with Dependent Children, Supplemental Security Income, and General Assistance--provide cash benefits to those with low incomes. We use the terms public assistance and welfare interchangeably. Because data on in-kind welfare programs--Food Stamps, Medicaid and Public Housing--are not available in the Current Population Survey, they are not analyzed in this paper.

[3]This decomposition copies the methodology used by Ross and Sawhill (1975, Appendix 4), who analyzed the period 1960 to 1970.

[4]The Census classifies a husbandless woman with children living in a household and related to the head of the household as a member of a subfamily (for example, the head of the household may be the father of the woman).

[5]The illegitmacy rate is defined here as the ratio of the number of never-married women with children to the total number of never-married women; the dissolution rate, as the ratio of the number of previously-married women with no husband present to the total number of ever-married women.

[6]Because of the different experiences of whtie and nonwhite women, the model is estimated separately for women of each race.

[7]Most women between 25 and 54 choose to be married or to head their own households, whereas most of the younger women choose between living with parents and female headship, and most of the older women choose between living with adult children and female headship.

[8]If inflation is taken into account, the rise in average benefits is about 10 percent. Benefits per person increased even more rapidly, since the average number of children in these families fell from 3.6 to 2.9.

[9]Of course, not all of the 1.15 million additional welfare recipients were among the 1.00 million additional households, but the rise in the proportion receiving welfare was undoubtedly due, in large measure, to greater reliance on welfare among those who became eligible more recently.

[10]The upper-bound estimate of the effect of welfare, suggested by the decomposition, is 75 percent for all women (both races) with children.

[11]Official federal poverty lines vary with family size. By dividing a family's income by its poverty line, we can compare income relative to needs for all families of varying size. This index is commonly referred to as a welfare ratio. A welfare ratio of 1.0 or below means that the family's income is at or below its official poverty line.

[12]Ever-married women with no husband present include those who are divorced, separated, or widowed.

[13]Because the poverty lines used to compute the welfare ratios vary with the price index, these comparisons adjust for inflation.

[14]Aggregate studies examine the relationship between rates of female headship in a geographic area and the economic and social attributes of the area, including AFDC benefits (Honig, 1974 and 1976; Minarik and Goldfarb, 1976; Ross and Sawhill, 1975).

[15]Hoffman and Holmes (1976) found that a couple with a low ratio of income to needs in a state with high AFDC benefits had about a 6 percent higher probability of experiencing a marital dissolution than a family with high income to needs in a low AFDC state. However, when they add another explanatory variable (age at marriage), this differential effect drops to 2 percent. Given this instability and the interactive form of the variable, it is difficult to interpret these findings. Hutchens (1977) found that the larger the AFDC guarantee available to a woman, the less likely she was to remarry.

[16]We use the CPS for two reasons. First, a major concern of the larger study of which this model is a part is the measurement of poverty and inequality. Thus, we want our results to be comparable to previous work that has been based on the CPS. To the extent that CPS reporting procedures are biased, the same biases are present in the work of others. The second reason for using the CPS is that we need a large sample. The CPS has about 10 times as many observations as the Michigan Panel.

[17]According to the Census, a single woman living with a nonrelative is classified as a primary or secondary unrelated individual. In our analysis, all unrelated individuals are treated as if they lived separately. This is done in order to have the headship categories correspond to our notion of income sharing. If a woman lives with relatives, she is part of their family, and is assumed to contribute to and share in their household income. If she lives with nonrelatives, it is assumed that she does not share income with those with whom she lives, and she is treated as if she were in her own household.

[18]These three catehories correspond to the Census definitions of female head of family (or female unrelated individual if the woman has no childre); married woman, husband present; and other family member (relative of a family head, wife of a subfamily head, or female head of a subfamily).

[19]Like Becker et al. (1977), we assume, for analytical simplicity, that the woman alone makes the headship choice.

[20]This assumption obviously abstracts from some of the institutional and cultural rigidities of society that might prevent such adjustment.

[21]Unearned income includes nonwelfare transfers, such as Social Security or unemployment compensation, and property income, such as dividends or interest.

[22]If there are other relatives in the household, their earnings also appear for all headship statuses.

[23]For example, most women will perceive that EY_H will exceed EY_S, as the averages show in Figure 1.

[24]To preserve the anonymity of respondents, the CPS does not provide detail on each of the 50 states. The data are grouped into 23 regions that are either single states (for large states) or groups of states. For example, New York and California are identified separately, but Wisconsin-Michigan is one of the 23 regions.

[25]Recall that each of these variables, Y_S, Y_H, Y_F, and T, is actually a vector of variables.

[26]The estimating procedure insures that for each woman the sum of the three probabilities equals one. The arguments of each utility function affect each of the three probabilities.

[27]When we employ these estimates in the headship equation, we use estimated values even for the status the woman currently occupies. We use these imputed values even for the status that we can observe for the following reason. There may be some unobserved characteristic, such as work ability, that caused the woman's actual earnings as a head to exceed by 20 percent the value prediced by our equations for EY_S on the basis of her characteristics. When we predict her earnings when living in a family member's household (EY_F), our prediction will not account for this unobserved factor. This means that if we used predicted EY_F and actual EY_S, the difference between the two incomes would be distorted. The model treats the headship decision as the outcome of a comparison among potential utilities in the three statuses. For making comparisons, it is more important to predict accurately differences between statuses than to predict well the level in any one status. Using two predicted values more accurately preserves the likely differences between them than would the use of a mixture of predicted and actual values.

[28]Actually we further subdivide the sample, estimating separate models by race (white, nonwhite), and perform the analysis for 1968 and 1975.

[29]The models for married women and subfamily members differ slightly from this model. However, they will not be discussed as we present estimates only for female heads in the next subsection.

[30]The vector of individual characteristics, C_j, contains many variables not all of which are included in each equation.

[31]It should be noted, however, that the standard errors of these predictions are large, and many of the comparisons of point estimates may not be significant.

[32]Figure 1 showed that ever-married women without husbands have an average of 57 percent less income relative to the poverty line than women with husbands present. The differences arises because the estimate here, from the regressions, corrects for differences in the characteristics of women in the two headship statuses.

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